

MODEL 630 RESISTANCE CHECK CHART

Switches may be in any position except the AF band switch. AF band switch should be in various positions noted in chart below. All resistances listed below are approximate and are in ohms.

K means X1000

M means X1,000,000

TYPE	SOC- KET#	PIN 1	PIN 2	PIN 3	PIN 4	PIN 5	PIN 6	PIN 7	PIN 8	BAND
V1 6C4	H61	More than 50K	∞	Less than 1	0	∞	330K	0	-	All
V2 6SN7	H7	570K	More than 50K	2K	////	////	////	Less than 1	0	All
V3 6SN7	H7	////	////	////	1.2M	More than 50K	1K	Less than 1	0	All
V4 6AU6	H8	12M	0	0	Less than 1	More than 50K	56K	400	-	20-40 AF band sw.
V4 6AU6	H8	12M	0	0	Less than 1	More than 50K	56K	400	∞	40-200AF band sw.
V4 6AU6	H8	1.9M	0	0	Less than 1	More than 50K	56K	400	-	200-2KAF band sw.
V4 6AU6	H8	100K	0	0	Less than 1	More than 50K	56K	400	-	2K-20KAF band sw.
V6 6X5	H1	∞	Less than 1	500	∞	500	∞	0	More than 50K	All

IMPORTANT NOTE

1. The position of the AF band switch will determine the resistance readings between Pin 1 of the 6AU6 and ground as noted in the resistance chart above.

2. Resistance readings should also be taken between Pin 1 of the 6AU6 and the junction of P2, C16 and S3A#5. (Note: ohmmeter ground lead should be connected to S3A#5; other lead to Pin 1 of 6AU6). These readings must be the same as those in the chart above for resistance readings of the 6AU6. When the two sets of readings are the same for each band, correct resistance balance of the Wien Bridge is indicated. (See technical bulletin #TB-630-101931 under Part #3 under "The following suggestions are therefore made").

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DRUM SUPPORT ASSEMBLY.

1. Mount $6\frac{1}{2}$ " x 2" metal plate (H60) onto panel with holes on short end of plate lining up with the 2 inside holes of panel and with bend facing up. Secure with 2 each $6/32$ x $\frac{1}{4}$ Phillips Head M.S. (H4) and with 2 each Taluts.
2. Adjust plate so large holes on either end of plate line up over the holes of drum assemblies.
3. Place fibre shoulder washers (H41) underneath plate holes, shoulder of washer facing down and fitting into holes of drum assemblies.
4. Place #6 flat metal washer (H68) on plate over each hole and secure plate to drums with 2 each $6-32 \times \frac{3}{8}$ M.S.

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MODEL 630 VOLTAGE CHECK CHART

The following voltages are approximate and may vary from instrument to instrument. All readings are taken with a VTVM (PRECISE Model 909). If power supply voltage is high; all voltages will be proportionately higher.

RF readings are made with the output switch at RF x 100, selector switch at CW and AF band switch at AF standby. RF & AF crystal potentiometers maximum clockwise. RF & AF variable condenser maximum counter clockwise.

All voltages are taken with respect to ground. Voltages are DC unless otherwise specified.

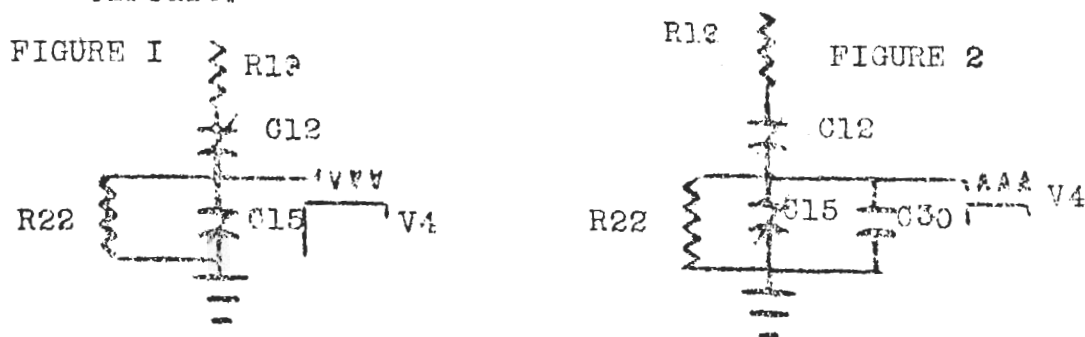
	TYPE	SOC- KET#	PIN 1	PIN 2	PIN 3	PIN 4	PIN 5	PIN 6	PIN 7	PIN 8	BAND
V1	6C4	H61	50	0	AC 6.3	0	0	* -17	0	-	.3-1mc RF band sw.
V1	6C4	H61	70	0	AC 6.3	0	0	* -15	0	-	1-3mc RF band sw.
V1	6C4	H61	95	0	AC 6.3	0	0	* -11	0	-	3-10mc RF band sw.
V1	6C4	H61	100	0	AC 6.3	0	0	* -7	0	-	10-30mc RF band sw.
V1	6C4	H61	135	0	AC 6.3	0	0	* -1	0	-	30-100mc RF band sw.
V2	6SN7	H7	0	200	7.5	///	///	///			All
V3	6SN7	H7	///	///	///	0	165	5	6.3	0	All
V4	6AU6	H8	0	0	0	6.3	100	65	1.2	-	All
V6	6X5	H1	0	AC 6.3	AC 225	0	AC 225	0	0	250	All

* Voltages may vary.

Special Consideration for the Model 630 Signal Generator:

The important factors to watch on the Model 630 are distributed capacity and hum. Both of these are a function of the wiring of the instrument and may be reduced to negligible factors with a little care.

1. Distributed Capacity. This is manifest in several different ways. (a) Poor alignment and (b) Signal amplitude ~~dropping~~ off at the high frequency side of each range except for the very lowest range. To fully appreciate the part distributed capacity plays, a basic analysis of the Wien Bridge circuit is desirable. Figure 1 shows the salient portions of this circuit.



Note that R19 and C12 are in series with R22 and C15 which are in parallel. This is the basic positive feedback loop of a Wien Bridge.

For the Bridge to work properly, the most important single feature is balance. R19 must be the same as R22 and C12 must be the same as C15. Since C12 and C15 are variable, all positions of C12 and C15 must be equal. Figure 2 shows the same circuit as Figure 1, except another condenser has been added (C30). C30 is the distributed capacity of the circuit plus the input capacity of the vacuum tube. This capacity is normally in the neighborhood of 10 to 20 uufd.

In the low frequency position of the variable condenser (the maximum capacity position), the 10-20 uufd of C30 is comparatively negligible in comparison with the 400 uufd of the variable condenser (2.5 to 5%). The low frequency end of the scale is then only slightly affected. In the high frequency position, however, the variable condenser is at its minimum capacity setting of approximately 10 uufd. The 10-20 uufd of C30 therefore plays a much greater role since it will affect the overall capacity 100 to 200%. The aforementioned difficulty causes a serious unbalanced since C30 is primarily across C15 and not across C12. The solution is to either eliminate C30 or add the equivalent of C30 across C12.

TECHNICAL BULLETIN #TB-630-101931 (continued).

In actual practice a compromise action is taken. C30 is reduced to a bare minimum by watching the wiring capacity and keeping all grid leads as far away from ground as possible and, also, by the addition of a trimmer capacitor across C30.

The following suggestions are therefore made:

1. Do not tighten the mounting on the variable condenser too much since the frame of the variable is electrically connected to the grid of V4 and is part of C30. If tightened too much, a great deal of capacity is added to ground, too much in fact to enable the trimmer across C12 to afford balance.
2. Make certain the wires going to the grid from switch S3 are well above ground physically.
3. If trouble exists, make certain the resistors are balanced. R18 should be the same as R21, R20 as R23, R19 as R22.

This is usually caused by filament, AC or transformer leads running too close to grid leads or too close to the mounting of the variable condenser. Judicious placement of these should eliminate the difficulty. Above all, if you recognize that the Model 630 will do all it is supposed to do and you write to us in the event of difficulty, we feel you should have many years of faithful service.

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